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Cosmology with nonminimal kinetic coupling and a power-law potential

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Abstract

We consider cosmological dynamics in the theory of gravity with the scalar field possessing a nonminimal kinetic coupling to gravity, κG μνφμφν, and the power-law potential V(φ)=V0φN. Using the dynamical system method, we analyze all possible asymptotical regimes of the model under investigation and show that for sloping potentials with 02. Using a numerical analysis, we also construct exact cosmological solutions and find initial conditions leading to the initial kinetic coupling inflation followed either by a "graceful" oscillatory exit or by the secondary inflation. © 2013 American Physical Society.

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